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**Meeting water needs for irrigated agriculture in a salmon bearing stream of
Mediterranean California**

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Abstract Text:

The Russian River Watershed encompasses approximately 1,500 square miles in Northern California, is the source of drinking water for nearly 600,000 people in three counties, supports over 60,000 acres of irrigated agriculture, and is designated as critical habitat for steelhead trout as well as Chinook and coho salmon. The availability of water for all rural and urban water users is an increasingly palpable and acute issue. This is evidenced by the California State Water Resources Control Board requiring 15 percent reduction in water use for 2007 because of low precipitation amounts the preceding winter. The best opportunity to relieve the pressure that competition for water is creating for all users, and in particular irrigated agriculture, is to work with agriculture to first understand its current and future water demand and then evaluate the existing and potential options for meeting those needs. We have conducted a comprehensive budget of irrigated agriculture water needs in the Mendocino County portion of the Russian River. This budget was done through a GIS mapping process and on-farm measurement of applied water, in conjunction with providing wine grape and pear growers with irrigation system evaluations. Additionally, we conducted grower focus groups to document the history of on-farm water resource management in the region and growers' perspectives on alternatives for water resource management, including alternative water sources. Our mapping results identified 16,555 acres of irrigated wine grapes, pears, and others crops, with an estimated annual water demand of 17,770 acre-feet. We have worked with 17 individual growers to measure application rates, uniformity, and determine weekly water budgets on 33 vineyard blocks, 4 pear orchards, and two irrigated pastures in the study area. These evaluations empirically represent nearly 500 acres, and can be responsibly extrapolated to a maximum of 3,000 acres or 18 percent of irrigated agriculture acreage in the study area. Preliminary results indicate that the mean annual water applied to meet wine grape crop water demand is 0.64 acre-feet (SD 0.29). This value, while not including water needed for frost protection or cooling, is 0.36 acre-feet less than that assumed by the California Department of Water Resources for irrigation of wine grapes in Mendocino County. Measured application uniformity within the evaluated vineyard blocks was 88.5 percent (SD 8.1), indicative of properly functioning irrigation systems with some isolated potential for improvement. This presentation will expand upon these preliminary results and share how project results are supporting irrigated agriculture to be even more effective and efficient in its management of water resources.

Impact Statement:

Estimating Agricultural Water Demand and Irrigation Technology Needs is providing a data supported determination of the state of water resource management for irrigated agriculture in the Mendocino County, California portion of the Russian River Watershed. Results from this project are already being incorporated into the Mendocino County General Plan update. They are also being used for planning purposes in discussions between the Mendocino County Water Agency, other significant community

service districts, and growers groups. Lastly, these results are the basis for formalizing an irrigated agriculture education and research program in the study area.